

TEST REPORT

<p>Client:</p> <p style="text-align: center;">M/s Ion Silver AB Produktvagen 12 B, 246 43 Loddekopinge Sverige / SWEDEN Tel/Phone: +46 (0)46 712 360 Fax: +46 (0)46 712 380 Email - info@ion-silver.com; logistics@silver-remedies.com Web- www.ion-silver.com</p> <p>Contact Person: Mr. Manu Chandran</p>	<p>Test Report No. : SRI / TR / 16-17 / 93</p> <hr/> <p>Report date : 12-11-2016</p> <hr/> <p>Our Ref Qtn : SRI/QTN/16-17/ 36/ 44</p> <hr/> <p>Order ID : SRI-ISAB-EC -548</p> <hr/> <p>Your PO No. : 001/ 03-10-2016</p>	
<p>TEST TYPE: Liquid Suspension Time Kill Study -Quantitative Test Based On ASTM 2315 TEST METHOD of Colloidal Silver Product at Contact time points: 30 sec, 1 min, 2 min, 5 min, 10 min, 15 min and 30 min. against following microorganisms:</p> <p>Bacterial cultures:</p> <ol style="list-style-type: none"> 1. S. aureus 2. E. coli 3. Methicillin Resistant S. aureus 4. P. aeruginosa 5. K. pneumoniae 6. Enterococcus faecalis <p>Fungal cultures:</p> <ol style="list-style-type: none"> 1. Candida albicans 2. Aspergillus niger 		
SAMPLE DETAILS	No. of samples	Sample receipt date
Silverion B. No: CAS 7440-22-4 -10PPM 2 x500 ml	One	27-09-2016
<p>SAMPLE DESCRIPTION: Two amber colored bottles.</p>		

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TEST INFORMATION:			
Analysis Started on	01-11-2016	Analysis Completed on	12-11-2016
Sample	Silverion B. No: CAS 7440-22-4	Contact time	30 sec, 1 min, 2 min, 5 min, 10 min, 15 min and 30 min.
Vol. of Sample used	9.9 ml	Vol. of Inoculum used	0.1 ml
Diluent Used	PBS	Neutralizer used	Dey Engley Neutralizing Broth
METHODS USED:		METHOD STANDARD:	
Time Kill Study -Quantitative Test Based On ASTM 2315 Test Method		Based on ASTM 2315.	
MEDIA USED:		CULTURE USED:	
Soyabean Casein Digest Broth Yeast Malt Broth DE Broth Soyabean Casein Digest Agar Potato Dextrose Agar Phosphate Buffered Saline (PBS) Phosphate Saline 0.85% with 0.2 % Tween 80		<ol style="list-style-type: none"> 1. <i>Staphylococcus aureus</i> ATCC 6538 2. <i>Klebsiella pneumoniae</i> ATCC 10031 3. <i>Escherichia coli</i> ATCC 8739 4. <i>Methicillin Resistant S. aureus</i> ATCC 33591 5. <i>P. aeruginosa</i> ATCC 9027 6. <i>Enterococcus faecalis</i> ATCC 29212 Fungal cultures: <ol style="list-style-type: none"> 1. <i>Candida albicans</i> ATCC 10231 2. <i>Aspergillus niger</i> ATCC16404 3. 	
INCUBATION CONDITIONS	35-37°C, Aerobic for 24-48 hrs for Bacteria. 25-27°C Aerobic for 72-96 hrs for Fungi.		

... for all your Microbiology Testing needs!

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OBSERVATIONS –I

INITIAL INNOCULUM COUNT	CFU/ml
<i>Staphylococcus aureus</i> ATCC 6538	1.5 x 10 ⁸
<i>Klebsiella pneumoniae</i> ATCC 10031	1.3 x 10 ⁸
<i>Escherichia coli</i> ATCC 8739	2.5 x 10 ⁸
Methicillin Resistant <i>S. aureus</i> ATCC 33591	1.7 x 10 ⁸
<i>P. aeruginosa</i> ATCC 9027	3.3 x 10 ⁸
<i>Enterococcus faecalis</i> ATCC 29212	1.5 x 10 ⁸
<i>Candida albicans</i> ATCC 10231	2.0 x 10 ⁸
<i>Aspergillus niger</i> ATCC16404	1.2 x 10 ⁸

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OBSERVATIONS II

Test Microorganism	Sample Concentration	Contact Time	CFU / ml	Log reduction vs. Control at 0 time	Percent Reduction vs. Control at 0 time
S. aureus ATCC 6538	Control Substance	Time Zero	4.1 E+06	NA	
	Silverion B. No: CAS 7440-22-4	30 sec.	2.0E+05	1.32	95.122
		1 min.	2.3E+05	1.26	94.390
		2 mins	1.0E+05	1.62	97.561
		5 mins	<1.0E+01	6.62	>99.9997%
		10 mins	<1.0E+01	6.62	>99.9997%
		15 mins	<1.0E+01	6.62	>99.9997%
		30 mins	<1.0E+01	6.62	>99.9997%
Klebsiella pneumoniae ATCC 10031	Control Substance	Time Zero	9.0 E+06	NA	
	Silverion B. No: CAS 7440-22-4	30 sec.	3.4E+03	3.42	99.9962%
		1 min.	6.0E+03	3.18	99.9333%
		2 mins	5.0E+03	3.25	99.9444%
		5 mins	1.0E+02	4.95	>99.9988%
		10 mins	4.0E+02	4.95	>99.9955%
		15 mins	<1.0E+01	6.95	>99.9993%
		30 mins	<1.0E+01	6.95	>99.9998%

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Test Microorganism	Sample Concentration	Contact Time	CFU / ml	Log reduction vs. Control at 0 time	Percent Reduction vs. Control at 0 time
Escherichia coli ATCC 8739	Control Substance	Time Zero	2.0 E+05	NA	
	Silverion B. No: CAS 7440-22-4	30 sec.	2.0E+04	1.00	90.0000 %
		1 min.	2.0E+04	1.00	90.0000%
		2 mins	<1.0E+01	>5.30	>99.9950%
		5 mins	<1.0E+01	>5.30	>99.9950%
		10 mins	<1.0E+01	>5.30	>99.9950%
		15 mins	<1.0E+01	>5.30	>99.9950%
		30 mins	<1.0E+01	>5.30	>99.9950%
Methicillin Resistant S. aureus ATCC 33591	Control Substance	Time Zero	4.5 E+06	NA	
	Silverion B. No: CAS 7440-22-4	30 sec.	3.0E+05	1.18	93.3333%
		1 min.	7.0E+05	<1.00	84.44444%
		2 mins	1.8E+05	1.39	96.0000%
		5 mins	7.0E+02	3.81	99.9844%
		10 mins	<1.0E+01	6.65	>99.9997%
		15 mins	<1.0E+01	6.65	>99.9997%
		30 mins	<1.0E+01	6.65	>99.9997%

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Test Microorganism	Sample Concentration	Contact Time	CFU / ml	Log reduction vs. Control at 0 time	Percent Reduction vs. Control at 0 time
P. aeruginosa ATCC 9027	Control Substance	Time Zero	4.0 E+05	NA	
	Silverion B. No: CAS 7440-22-4	30 sec.	1.0E+04	1.60	97.5000%
		1 min.	2.0E+03	2.30	99.5000%
		2 mins	<1.0E+01	>5.60	>99.9975%
		5 mins	<1.0E+01	>5.60	>99.9975%
		10 mins	<1.0E+01	>5.60	>99.9975%
		15 mins	<1.0E+01	>5.60	>99.9975%
		30 mins	<1.0E+01	>5.60	>99.9975%
		Enterococcus faecalis ATCC 29212	Control Substance	Time Zero	2.0 E+05
Silverion B. No: CAS 7440-22-4	30 sec.		1.4E+04	1.15	93.0000%
	1 min.		1.1E+04	1.26	94.5000%
	2 mins		4.0E+03	1.70	98.0000%
	5 mins		5.0E+03	1.60	97.5000%
	10 mins		4.0E+03	1.70	98.0000%
	15 mins		4.0E+03	1.70	98.0000%
	30 mins		3.0E+03	1.82	98.5000%

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Test Microorganism	Sample Concentration	Contact Time	CFU / ml	Log reduction vs. Control at 0 time	Percent Reduction vs. Control at 0 time
Candida albicans ATCC 10231	Control Substance	Time Zero	3.1 E+05	NA	
	Silverion B. No: CAS 7440-22-4	30 sec.	2.0E+05	<1.00	35.4838%
		1 min.	1.0E+05	<1.00	67.7419 %
		2 mins	1.0E+04	1.49	96.7741%
		5 mins	3.0E+04	1.01	90.3225 %
		10 mins	2.0E+04	1.19	93.5484%
		15 mins	1.3E+04	1.38	95.8064 %
		30 mins	8.0E+03	1.59	97.4193%
Aspergillus niger ATCC 16404	Control Substance	Time Zero	4.0 E+05	NA	
	Silverion B. No: CAS 7440-22-4	30 sec.	1.0E+05	<1.00	75.0000%
		1 min.	1.0E+05	<1.00	75.0000%
		2 mins	2.0E+05	<1.00	75.0000%
		5 mins	2.2E+05	<1.00	75.0000%
		10 mins	3.0E+04	1.12	92.5000%
		15 mins	2.0E+05	<1.00	75.0000%
		30 mins	1.0E+05	<1.00	75.0000%

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RESULTS:

Under the given test conditions:

1. The Test Sample -Silverion B. No: CAS 7440-22-4 exhibits **more than 99.99%** reduction in the count of *Staphylococcus aureus* ATCC 6538 at **5 mins** of contact time.
2. The Test Sample -Silverion B. No: CAS 7440-22-4 exhibits **more than 99.99%** reduction in the count of *Klebsiella pneumoniae* ATCC 10031 at **5 mins.** of contact time.
3. The Test Sample -Silverion B. No: CAS 7440-22-4 exhibits **more than 99.99%** reduction in the count of *Escherichia coli* ATCC 8739 at **2 mins** of contact time.
4. The Test Sample -Silverion B. No: CAS 7440-22-4 exhibits **more than 99.99%** reduction in the count of *Methicillin Resistant S. aureus* ATCC 33591 at **10 mins** of contact time.
5. The Test Sample -Silverion B. No: CAS 7440-22-4 exhibits **more than 99.99%** reduction in the count of *P. aeruginosa* ATCC 9027 at **2 mins** of contact time.
6. The Test Sample -Silverion B. No: CAS 7440-22-4 exhibits **98.50%** reduction in the count of *Enterococcus faecalis* ATCC 29212 after **30 mins** of contact time.
7. The Test Sample -Silverion B. No: CAS 7440-22-4 exhibits **97.42 %** reduction in the count of *Candida albicans* ATCC 10231 after **30 mins** of contact time.
8. The Test Sample -Silverion B. No: CAS 7440-22-4 exhibits **75.00%** reduction in the count of *Aspergillus niger* ATCC16404 after **30 mins** of contact time.

Report prepared by: **MAA**

Checked by: **AGA**

Disclaimer

Shubhda Research Institute does not assume any responsibility as regards the origin of the sample, results obtained or further actions taken by you based on our results.

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